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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/770,141	02/02/2004	Serguei Koulikov	PIC-10024	2647
7590	01/21/2005		EXAMINER	
Herbert Burkard 480 Oakmead Parkway Sunnyvale, CA 94085			MARTINEZ, JOSEPH P	
			ART UNIT	PAPER NUMBER
			2873	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/770,141	KOULIKOV ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joseph P. Martinez	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 19-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-18, drawn to an apparatus coupling a collimated lightbeam into a waveguide, classified in class 359, subclass 641.
- II. Claims 19-20, drawn to an external cavity laser, classified in class 372, subclass 70.
- III. Claims 21-24, drawn to a process for achieving maximum coupling efficiency, classified in class 385, subclass 33.
- IV. Claim 25, drawn to a process for achieving maximum coupling efficiency, classified in class 385, subclass 18.

The inventions are distinct, each from the other because of the following reasons:

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the apparatus for coupling collimated light does not require an external cavity laser to operate or a wavelength selective reflective element in order to function properly. The subcombination has separate utility such as a laser light source.

Inventions I and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the

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product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process for achieving maximum coupling efficiency can be practiced with an apparatus in which the lens and waveguide are not permanently affixed or wherein the lens and waveguide are not on a common rigid support.

Inventions I and IV are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process for achieving maximum coupling efficiency can be practiced with an apparatus which does not have a wavelength selective reflective element, the lens and waveguide are not permanently affixed or wherein the lens and waveguide are not on a common rigid support.

Inventions II and III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, the process for achieving maximum coupling efficiency does not require an external cavity laser or a wavelength selective reflective element.

Inventions II and IV are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product

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as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case, in the instant case, the process for achieving maximum coupling efficiency can be practiced with an apparatus in which the lens and waveguide are not permanently affixed or wherein the lens and waveguide are not on a common rigid support.

Inventions III and IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the process for achieving maximum coupling efficiency as taught in claims 21-24 do not require the particulars of a wavelength selective reflective element. The subcombination has separate utility such as a process for coupling light with a waveguide.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Groups II, III or IV, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group II is not required for Groups I, III or IV, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group III is not required for Groups I, II and IV, restriction for examination purposes as indicated is proper.

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Because these inventions are distinct for the reasons given above and the search required for Group IV is not required for Groups I, II or III, restriction for examination purposes as indicated is proper.

During a telephone conversation with attorney H. Burkard on 1-13-05 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-18. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-25 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 5-11 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Bergmann et al. (6374012).

Re claim 1, Bergmann et al. teaches for example in fig. 1A-1C and 10, an apparatus for coupling a collimated light beam into a wave guide comprising: i) a strong focusing lens (98) interposed between the source of said collimated light beam (103) and said waveguide (101); and ii) a weak lens (97) positioned in the path of said collimated light beam between said source and said strong lens, said weak lens being translatable (col. 11, ln. 33-37) along the path of said collimated beam and also having at least one degree of positional freedom in a plane perpendicular to said beam path (col. 5, ln. 42-43).

Re claims 5 and 6, Bergmann et al. further teaches for example, the weak lens has a focal length in the range of 10mm to 500mm or 20mm to 200mm (col. 7, ln. 5-10).

Re claims 7 and 8, Bergmann et al. further teaches for example, the weak lens has a focal length in the range of from about 10 to about 100 times or from about 20 to about 50 times that of the strong lens (col. 4, ln. 44-55).

Re claim 9, Bergmann et al. further teaches for example, the weak lens is a positive lens (col. 5, ln. 44-45).

Re claim 10, Bergmann et al. further teaches for example, the weak lens is a plano convex lens or biconvex lens (col. 5, ln. 62-67, wherein the office interprets contouring both sides of a lens to disclose biconvex).

Re claim 11, Bergmann et al. further teaches for example, said waveguide is a single mode optical fiber (col. 11, ln. 29-30).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 2, 3 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergmann et al. (6374012).

Re claim 2, Bergmann et al. further teaches for example in fig. 1A-1C and 10, the weak lens has two degrees of positional freedom (col. 10, ln. 25-31).

But, Bergmann et al. fails to explicitly teach the weak lens has three degrees of positional freedom.

However, Bergmann et al. teaches for example in fig. 8, three degrees of adjustment by further including left-right positioning of the termination 84 by sliding it within sleeve 89. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to move the termination relative to the lens or move the lens relative to the termination, since the relative movement of the termination or the lens are known equivalents in the art and the selection of any of these known equivalents would be within the level of ordinary skill in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Bergmann et al. to provide three degrees of



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positional freedom for the weak lens in order to focus the optical beam into the end face of the fiber.

Re claim 3, Bergmann et al. further teaches for example, the weak lens has at least one orientational degree of freedom (col. 6, ln. 9-13, wherein the office interprets the rotation of the lens and lens holder to disclose the claimed limitation).

Re claim 18, Bergmann et al. further teaches for example in fig. 1A-1C and 11, said weak lens is fixedly held in a lens mount (col. 4, ln. 63) contained within a housing (105), said lens mount being vertically moveable within said housing and said housing being translatable along said beam path and also transverse to said beam path (col. 11, ln. 64-67 to col. 12, ln. 1-3).

2. Claims 12, 13, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergmann et al. (6374012) in view of von Kopylow et al. (6785307).

Re claim 12, Bergmann et al. teaches the apparatus as disclosed above, including a waveguide.

But, Bergmann et al. fails to explicitly teach the waveguide is a frequency doubling crystal.

However, Kopylow et al. teaches for example in fig. 1, the waveguide is a frequency doubling crystal (6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Bergmann et al. with the frequency doubling crystal of Kopylow et al. in order double the frequency of the radiation, as taught by Kopylow et al. (col. 4, ln. 9-10).

Re claims 13, Bergmann et al. teaches the apparatus as disclosed above, including the apparatus is for use in optical communications including transmitters (col. 1, ln. 13-18).

But, Bergmann et al. fails to explicitly teach an external laser cavity.

However, within the same field of endeavor, von Kopylow et al. teaches for example in fig. 1, an external laser cavity (1, 2 and 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Bergmann et al. to include the external laser cavity of Kopylow et al. in order to generate the light input.

Re claims 16 and 17, Kopylow et al. further teaches for example in fig. 1, said source of collimated light comprises a pump laser (2) and said waveguide comprises a frequency doubling crystal (6) and said frequency doubling crystal comprises periodically poled Potassium Titanyl Phosphate (col. 4, ln. 9).

3. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bergmann et al. (6374012) in view of Cheng (5850493).

Re claim 14, Bergmann et al. further teaches for example in fig. 1A-1C and 10, a strong collimating lens (98), a beam source and a focusing lens (97).

But, Bergmann et al. fails to explicitly teach an optical isolator interposed between said beam source and said focusing lens.

However, within the same field of endeavor, Cheng teaches for example in fig. 4, an optical isolator (18a) interposed between said beam source (11a) and said focusing lens (10b).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Bergmann et al. with the optical isolator of Cheng in order to isolate frequencies.

Re claim 15, Bergmann et al. further teaches for example in fig. 1A-1C and 10, said weak lens has at least one orientational degree of freedom (col. 5, ln. 42-43).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph P. Martinez whose telephone number is 571-272-2335. The examiner can normally be reached on M-F 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JPM  
1-14-05

A handwritten signature in black ink, appearing to be "H. J. ...", is written over a rectangular date stamp. The date stamp contains the text "JAN 14 2005" in a grid-like format.